



Indianapolis-Marion County Forensic Services Agency *Focus*

Serving the Citizens &
Criminal Justice System
of Marion County

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Crime Scene Specialists

Crime Scene Specialists (CSS) working at the I-MCFSA are selected on the basis of their education and past experience.

ASCLD/LAB, which accredits our laboratory, recommends a minimum of a bachelor's degree with science courses for an entry level CSS position. When considering the essential nature of the CSS at the crime scene we expect these standards only to increase in the future. After selection the CSS receives approximately six (6) months of training in the areas of photography, videography, crime scene documentation, DNA recovery, latent print processing and recovery with various powders and chemicals, shoe print and tire track recovery, courtroom testimony, evidence collection, handling and packaging, and various other forensic science applications related to their work in both the field and laboratory. The CSS is also fully trained to develop latent prints using numerous technologies both at the crime scene and in the laboratory. Some of the CSS's have also received basic training in collecting bloodstain evidence at the crime scene. Crime Scene Specialists are fully equipped to



Swabbing a Vehicle for Touch DNA

document a crime scene in its entirety with measurements, sketches, photographs, video and detailed notes and descriptions. They have an abundance of equipment, such as a UV light to search for biological fluids, a vacuum for collecting trace evidence, and a metal detector. Overall, the job

of a CSS continues to advance with other forensic technologies in the lab requiring increased education and technical training programs.



Digitally Mapping a Crime Scene

ASCLD/LAB-International accreditation standards require Crime Scene Specialists to follow the approved standard operating procedures and policies. While many of the procedures and policies require detailed note taking, documentation, etc., this all serves to ensure that the quality of the crime scene investigation is held to the highest level. For example, a CSS is required to do a crime scene sketch every time they collect only one item of evidence. Their detailed documentation of the crime scene takes time, but it is not without purpose. Another of the accreditation requirements is that CSS's must put their investigative notes, photos, videos, evidence packaging, etc., together in a manner that any other CSS could review the documentation and understand what tasks were completed; the evidence that was collected; who the lead detective was at the scene, etc. The CSS position carries with it great responsibility at the scene of a crime and the overall work effort of a CSS is critical to investigative outcomes. Crime Scene Specialists assigned to the Indianapolis-Marion County Forensic Services Agency shall respond, when requested, to the types of crime scene investigations identified below:

- Homicides
- Suicides

- Industrial accident resulting in death or serious injury
- Suspicious/Accidental deaths
- Infant death where Sudden Infant Death Syndrome (SIDS) is suspected
- Death investigations where a suspect dies in police custody/transit
- Missing person cases where the victim is believed to have met with foul play
- Police action shootings
- Bank robbery
- Business robbery with injury
- Residence robbery with injury
- Kidnapping
- Carjacking with injury
- Sexual assaults/rape
- Child molestation/abuse
- Person shot
- Aggravated assault
- Fire scenes involving suspected homicide, suspicious death or injury



Collecting Evidence at the Scene of a Shooting

I-MCFSA Crime Scene Specialists are also available on a limited basis to provide assistance to evidence technicians and other officers who need advice or instruction on how to proceed with non-standard evidence handling situations in cases involving other types of crimes.

- Brittney Raper
Crime Scene Specialist &
- Mike Medler
Laboratory Director

Inside this issue:

**Restoring
Obliterated Serial
Numbers** 2

**Blood Alcohol
Concentration
Testing** 2

**Accreditation
Snapshot** 3

**Biological Evidence
Submission Policy** 3

**Firearm Submission
Safety** 4

**Lab Contacts &
Customer Survey
Web Address** 4

Of Note:

- A major crime scene vehicle was purchased with shared grant monies awarded to the I-MCFSA and Hamilton County Sheriff's Department
- 54 CODIS hits were recorded in 2009 by the I-MCFSA - a 42% increase over 2008.
- Case analysis requests reached 7037 thru June, a 5% increase over 2009 levels



Restoring Obliterated Serial Numbers

A significant step in the regulation of firearms in the United States was the Federal Gun Control Act of 1968 which mandated all firearms manufactured or imported into the United States must bear a readily visible serial number located on the frame or receiver. To maintain the integrity of the number the law states: "No person shall knowingly transport, ship or receive in interstate commerce any firearm which has had the import's or manufacturer's serial number removed, obliterated or altered."

As a result, a routine function of the Firearms Section is to attempt to restore obliterated serial numbers and other stamped markings on firearms. Restoration of a serial number may be accom-

plished whenever the obliterating process has not totally removed all evidence of the serial number or



Ground Smooth Obliteration



Restored Serial Number
1074727

marking. The reason this process is possible is due to the metallurgical change that occurs to the object as a result of being stamped. The stamping tool, upon striking the object, creates a hardened zone in the metal's crystalline structure.

This metallurgical hardened zone, by its description, is stronger than the non-hardened metal. Because the stamping of the serial number deforms the metal's crystalline structure well below the indentation, a serial number can appear to have been obliterated while evidence of the number may still remain.

A variety of methods to remove or obscure the serial number are observed by Firearms Examiners at the crime lab. The most common are grinding, scratching, punching and drilling.

A technique used at the crime lab, and common at other crime laboratories, is the use of chemical etchants such as Fry's Re-

agent, Ferric Chloride, Nitric Acid and Sodium Hydroxide. Depending on the metal composition (i.e.: steel or alloy) one or a combination of the chemicals are used to remove the metal. Given that the stamping creates a hardened zone, the non-hardened metal is removed slightly faster than the hardened zone. This technique results in the number being "raised" or restored.

- F/S Richard Amberger
Firearms Examiner

(Reference: Treptow, Richard S., Handbook of Methods for the Restoration of Obliterated Serial Numbers, Chicago State University, January 1978)

Blood Alcohol Concentration Testing

The Trace Section of the I-MCFSFA tests blood for the concentration of ethyl alcohol. This testing is most often done for traffic investigations; however, it can be useful in other cases as well. This lab does not test blood samples for drugs of abuse. Requests to test blood for drugs are sent to the State Department of Toxicology. In many instances, determining a person's blood alcohol concentration can be done with a breathalyzer, but if a person cannot give a breath sample or refuses (and an officer gets permission or a court order), a blood sample can be drawn and submitted to the lab.

In Indiana, the legal limit to show a person is intoxicated is eight-hundredths (0.08) of a gram per 100 milliliters, that is grams of ethyl alcohol per 100 milliliters of the sample. This may also be reported as 0.08% weight per volume (w/v), which is a different unit of measurement. In a 150 pound man, that is approximately 3 to 4 drinks consumed in one hour. Average absorption and elimination rates are slightly different for males and females.

Indiana code requires that the

incident "occurred not more than three (3) hours before the time the sample is requested." It is important to have the blood drawn as soon after the offense as possible. When a person drinks alcohol, it is absorbed into the body and metabolized. As it is absorbed, the level of alcohol in the blood will increase to a peak concentration. After a person stops drinking and has reached the peak level of alcohol concentration, then the concentration will start to go back down as the alcohol is metabolized. It takes approximately 45 minutes to reach the peak concentration after a person has been drinking. Because of this, the concentration of the alcohol in the blood at the time it is drawn may be higher, lower or the same as the concentration at the time of the accident.

The alcohol concentration will be higher when drawn if the body is still absorbing the alcohol into the blood. If the person had stopped drinking 2 hours before the accident, for instance, the level of alcohol will have already reached its peak and be going back down at the time it is drawn. After it has reached its peak concentration, the alcohol concentration will de-

crease about 0.017 gram per 100 milliliters per hour.

The I-MCFSFA prefers that blood be collected in a gray top tube for ethyl alcohol analysis. The tubes are color-coded based on what additives, if any, are present. A gray top tube has potas-



Gas Chromatograph

sium oxalate to keep the blood from clotting and sodium fluoride to preserve the blood. A red top tube has no additives, so the blood normally is clotted by the time it reaches the I-MCFSFA for analysis. If clotted, the whole blood cannot be tested directly; and the concentration of ethyl alcohol is reported to be within a range of two numbers.

The blood alcohol concentration is determined in the I-MCFSFA lab using a gas chromatograph. A series of dilutions of the blood, a

calibrator, a water blank, and control are injected into the gas chromatograph. The different volatile alcohol and ketone compounds that can be detected in human blood travel through a column at different rates and will reach a detector at different times, defined as retention times. Ethyl alcohol, the alcohol in beverages, will travel at a different rate than isopropyl alcohol, rubbing alcohol, for instance. The ethyl alcohol concentration is what is needed for traffic investigations to show intoxication. Based on the different retention times, it can be determined if there is ethyl alcohol present. The detector will give a signal proportionate to the concentration which can be used to calculate the concentration. This lab runs control samples with known concentrations to insure that the concentrations determined by the instrument are accurate. Analyzing blood for the concentration of ethyl alcohol is a very common and reliable test.

- F/S Bob McCurdy
Chemistry Unit Supervisor

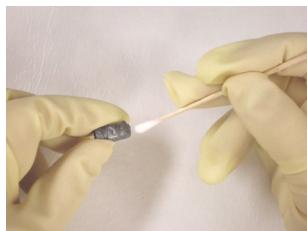


Accreditation Snapshot

The ASCLD/LAB-International accreditation program of the American Society of Crime Laboratory Directors/Laboratory Accreditation Board (ASCLD/LAB) is a program of accreditation in which any crime laboratory may participate to demonstrate that its technical operations and overall management system meet ISO/IEC 17025 requirements and ASCLD/LAB-International Supplemental Requirements.

Accreditation is part of a laboratory's quality assurance program which should also include proficiency testing, continuing education, customer liaison, and other programs to help the laboratory provide more effective overall service. Most people outside the laboratory have little idea about the comprehensive nature of this assessment process. Before an assessment team visits the laboratory, all of the laboratory's operational and technical procedures are carefully reviewed along with numerous documents related to personnel qualifications and evidence handling procedures. Every aspect of the laboratory's operation is carefully reviewed including its man-

agement practices, evidence handling procedures, and laboratory security procedures. Training programs, proficiency testing, competency testing records and testimony monitoring records are reviewed for each employee.



Swabbing a Spent Bullet

The assessment team reviews case files for each employee in the laboratory to ensure that laboratory procedures are consistently being followed and that ASCLD/LAB-International and ISO 17025 requirements are being consistently met.

In an effort to help our customers better understand the importance of accreditation future *Focus* Newsletters will highlight an area of the ASCLD-LAB (ISO 17025) accreditation that the I-MCFSAs comply with in our

overall forensic operations of the laboratory. The "snapshot" will highlight a current section of our standard operating procedures or training manuals that are followed by I-MCFSAs personnel. Please remember that I-MCFSAs procedures and policies may change and the "snapshot" listed in the *FOCUS* Newsletter may not be accurate at the time the reader reviews the "snapshot". Current procedures and policies are maintained electronically at the lab.

Swabbing Bullets for DNA Analysis

It is sometimes necessary for the detective and/or prosecutor to know if a bullet struck the victim. Bullets that are found at a serious bodily injury or homicide crime scene shall be routinely swabbed by Crime Scene personnel. DNA analysts will be looking specifically for the presence of the victim's DNA. The following procedures will outline where to swab the bullet and how it will be collected.

- a. All bullets or fragments found/collected by Crime Scene personnel will be treated as a Biohazard.
- b. Bullets and fragments

will be swabbed using accepted standard DNA swabbing procedures.

c. When swabbing a bullet or fragment; the "Nose" and "Base" of the bullet or area that does NOT contain rifling should be swabbed.

d. Swabs taken from the original item bullet will be listed as a sub-item of that bullet.

e. One swab will be taken when several fragments are grouped at the crime scene.

f. If the bullet fragments can't be grouped then one (1) swab should be used per fragment.

g. Swabs will be taken as a matter of course regardless of there being a request made by a detective/prosecutor.

Exception to rule: Talon type bullets (expanded, jacketed hollow points) displaying jagged, sharp edges will be sent to the Serology Section and they will recover the sample.

Biological Evidence Submission Policy

A new Biological Evidence Submission Policy was implemented in 2010 to be utilized when submitting biological evidence to the Indianapolis-Marion County Forensic Services Agency (I-MCFSAs). The overall purpose of the policy, which mirrors similar biological evidence submission policies from other crime labs throughout the United States, is to more effectively and efficiently use the resources in our Biology Unit. The policy also should improve communications with our criminal justice customers and keep the I-MCFSAs from conducting Serological and DNA analyses that are redundant or not needed. Overall, the policy should



I-MCFSAs Biology Unit & Marion County Coroner's Office, 521 W. McCarty St.

also improve our turn-around time on criminal cases and aid investigations with needed information for filing charges or for court. A **Biological Evidence Submission Form** must be com-

pleted with the **Request for Analysis Card** as part of the improvement to the communications.

Since we are in the process of running a pilot test for our new **Online Request for Analysis** in the IMPD Homicide and Robbery Branch, as well as Domestic and Sex Violence Branch, the **Biological Evidence Submission Form** must be submitted along with the new "online" request. This should be included in your document. The link the officers need to use is: <http://intranet.indy.gov/sites/FSA/Pages/homepage.aspx>.

Officers and agencies **not** in the pilot test group should continue to use the Request for Analysis Card and include a completed photocopy of the Biological Evidence Submission Form.

Outside agencies (Lawrence P.D., Speedway P.D., Beech Grove P.D., etc.) may obtain the Biological Evidence Submission Form from the Forensic Evidence Specialists for copying and printing by calling 327-3670.

- F/S David Smith
DNA Analyst
Serology Section Supervisor



**Indianapolis-Marion County
Forensic Services Agency
40 S. Alabama St.
Indianapolis, IN 46204**

**Phone: 317-327-3670
Fax: 317-327-3607**

<http://www.indy.gov/eGov/County/FSA/Pages/home.aspx>

Customer Survey Link:
<http://spspp01/sites/Crimelab/Lists/Customer%20Survey/overview.aspx>

**Serving the Citizens &
Criminal Justice System
of Marion County**

Laboratory Management Team:

Michael Medler, Laboratory Director
Ronald Blacklock, Deputy Laboratory Director
Brenda Keller, Quality Assurance Manager
Muhammad Amjad, DNA Tech. Leader/Supervisor
Lee Ann Harmless, FDE/Latent Prints Supervisor
Robert McCurdy, Chemistry Unit Supervisor
Michael Putzek, Firearms Section Supervisor
Mark Wallace, Crime Scene Spec. Supervisor
David Smith, Serology Section Supervisor
Amanda Sondgeroth, Forensic Evidence Tech. Sup.
Larry Schultz, Forensic Operations Manager
Jeani Nolte, Forensic Administrator
Newsletter edited by Ronald Blacklock



The Indianapolis-Marion County Forensic Services Agency shall provide forensic services to the Marion County Community by supporting the needs of the Criminal Justice System. The forensic services provided shall be built on a foundation of quality, integrity, accountability and ethics. All I-MCFS personnel shall strive to meet forensic needs of today and into the future in all their work endeavors.

Forensic Services Board

Paul Ciesielski, Chairman, Chief - Indianapolis Metropolitan Police Department
Frank Anderson, Marion County Sheriff
Dr. Frank Lloyd, Marion County Coroner
Billie Breaux, Marion County Auditor
Joseph Bono, Mayoral Appointee; President, American Academy of Forensic Sciences, IUPUI Forensic & Investigative Sciences Program
Dr. Sam Nunn, City-County Council Appointee, IUPUI School of Public & Environmental Affairs

Firearm Submission Safety

The I-MCFS Laboratory strives to provide the best service to submitting agencies. Service starts with the receipt of firearms evidence from IMPD and other police departments.

Outside agencies (Lawrence, Speedway, Beech Grove Police Departments, etc.) should have a complete list of **all** evidence being submitted, request for analysis cards filled out, evidence properly packaged and sealed prior to being brought to the laboratory. All firearms submitted for examination by the laboratory should have a nylon tie placed through the magazine well or cylinder to prevent cartridges from getting into the chamber. Cartridges should be packaged separately and not loose in the box with the submitting firearm.

DO NOT PLACE NYLON TIES THROUGH THE BARREL OF THE FIREARM as this can interfere with testing.

When the firearm first enters

the laboratory it will be inspected by a qualified Firearms Examiner, Firearms Technician or other authorized individual to ensure that the firearm is



Handgun Submission

unloaded and properly "strapped." Firearms found to be loaded at time of submission will be made safe and the submitting officer instructed on firearms submission procedures for the laboratory regarding loaded firearms.

Procedures for Outside Agencies:

If an outside submitting agency has a firearm that cannot be unloaded safely or is in an unsafe

condition they may still bring it to the laboratory under the following conditions:

- The submitting agency will call ahead and make sure the laboratory has personnel available to render the firearm safe.
- The agency will bring the firearm into the laboratory and they will immediately inform front desk personnel of the unsafe firearm.
- The firearm will be taken to the firearm unloading station for immediate inspection and unloading by qualified individuals.
- The submitting officer will inform the individual unloading the firearm what analysis will be needed on the weapon.

Procedures for IMPD:

IMPD personnel who have a

firearm that cannot be safely unloaded should follow their standard operating procedures and also contact the IMPD property room for further instruction on what to do prior to bringing it to the property room. Unsafe firearms received at the property room will be placed in an "unsafe gun locker" where it will remain until I-MCFS laboratory personnel retrieve it and render it safe. If a firearm is to be brought directly to the laboratory, IMPD officers should follow the same guidelines for outside agencies as stated above. Firearm safety is a very serious concern and everyone involved should be aware of safety precautions should they need to submit a loaded firearm to the laboratory. The laboratory does not accept loaded firearms unless these procedures are followed. Be safe!

- FS Mike Putzek
Firearms Section Supervisor